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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,539	11/09/2000	Benjamin N. Eldridge	276440-3	5812

7590 03/10/2005

FormFactor, Inc
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EXAMINER	
TSUKERMAN, LARISA Z	
ART UNIT	PAPER NUMBER
2833	

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/710,539	ELDRIDGE ET AL.	
	Examiner	Art Unit	
	Larisa Z. Tsukerman	2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *amendment dated 12/10/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-6,13,14,17,19,21,25,38,41,48,51 and 71-82* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-6,13,14,17,19,21,25,38,41,48,51 and 71-82* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 November 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 19, 25, 38, 41, 48, 51 and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (5613861).

In regard to claim 71, as best understood, Smith et al. discloses a microelectronic spring structure 15 comprising:

a base 12 secured to a terminal 13 of an electronic component 14; and

a beam 11 extending from the base 12 and spaced from the electronic component 14, a cross-sectional width of the beam being contoured (see Figs 11-13).

Examiner notes that "being contoured" may include any shape of outline, regular and irregular.

In regard to claim 19, Smith et al. disclose the beam 11 is contoured in a lengthwise direction (see Figs. 11-12).

In regard to claim 25, Smith et al. disclose the beam 11, in a lengthwise sectional view, has a stepped portion (see Fig. 13, next to numeral 19).

In regard to claim 38, Smith et al. disclose the base 12 and the beam 11 are integrally formed (see Figs 6 and 13).

In regard to claim 41, Smith et al. disclose the microelectronic spring structure 15, wherein the beam 11, viewed in a direction normal to the electronic component, is tapered so as to have a generally triangular shape 30 (see Fig. 20).

In regard to claim 48, Smith et al. discloses the microelectronic spring structure 15, wherein the base 12 and the beam 11 are integrally formed (see Figures 6, 10-13) and comprise a resilient material (see Col. 5, line 42-46, since each spring contact 15 is preferably made of a highly elastic material, each spring contact 15 can be pushed down at the tip 30 and deformed as shown in FIG. 6, but will not plastically deform), as claimed.

In regard to claim 51, Smith et al. disclose the base 12 and the beam 11 are integrally formed and comprised a layer of an electrically conductive seed material and a layer of electroplated metallic material 19 (gold, see Fig.13 and Col.8, lines 57-62).

Claims 71 – 73 are rejected under 35 U.S.C. 102(b) as being anticipated by Dozier, II et al. (5772451)

In regard to claim 71, as best understood, Dozier, II et al. disclose a microelectronic spring structure 320 comprising:

a base 320b secured to a terminal 308 of an electronic component 304; and a beam 320 extending from the base 320b and spaced from the electronic component 304, a cross-sectional width of the beam being contoured.

In regard to claims 72 and 73, Dozier,II et al. disclose that electronic component 304 is a semiconductor die from a plurality of semiconductor dice composing an

unsingulated semiconductor wafer (see Col.8, lines 54-60, Col. 9, lines 24-36 and Col.23, lines 33-45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21, 74 and 77 – 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (5613861) in view of Seymour (4772228).

In regard to claim 21, Smith et al. discloses most of the claimed invention except for the cross-sectional width of beam 11 is generally "V"-shaped. Seymour teaches a beam 12 contoured in a "V" shape (see Figs.2 and 2a). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the "V" shaped beam of Seymour in structure of Smith et al. in order to reduce deflection and deformability of the beam and increase the rigidity.

In regard to claim 74, Smith et al. disclose an electronic component 14 comprising:

a terminal 13; and

a contact structure 15 comprising: a base 12 secured to the terminal 13; and a beam 11 extending from the base 12 and spaced from the electronic component 14.

However, Smith at el. lacks a cross-sectional width of the beam contoured in a "V" shape. Seymour teaches a beam 12 contoured in a "V" shape (see Figs.2 and 2a). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the "V" shaped beam of Seymour in structure of Smith et al. in order to reduce deflection and deformability of the beam and increase the rigidity.

In regard to claim 77, Smith et al. discloses the beam 11 is contoured along a length thereof (see Figs. 10-13).

In regard to claim 78, Smith et al. discloses the beam 11 has a generally triangular shape (see Fig. 20).

In regard to claim 79, Smith et al. discloses the base 12 and the beam 11 are integrally formed.

In regard to claim 80, Smith et al. discloses the base 12 and the beam 11 comprise a resilient material (see Col. 5, line 42-46, since each spring contact 15 is preferably made of a highly elastic material, each spring contact 15 can be pushed down at the tip 30 and deformed as shown in FIG. 6, but will not plastically deform).

In regard to claim 81, Smith et al. discloses the base 12 and the beam 11 comprise a layer of an electrically conductive seed material and a layer of electroplated metallic material 19 (see Fig.13, which shows a layer of gold 19 plated over the outer surface of each spring contact 15. The layer of gold 19 is preferably used to reduce the resistance in the spring contacts 15, but can be replaced with any other conductive material. Preferably, the gold layer 19 is plated on the spring contacts 15 using an electroless plating process).

In regard to claim 82, Smith et al. discloses a plurality of the terminals 13 and a plurality of the contact structures 15 (see Fig. 29).

Claims 74, 75 and 76 are rejected under 35 U.S.C. 102(b) as being anticipated by Dozier, II et al. (5772451) in view of Seymour (4772228)

In regard to claim 74, Smith et al. disclose an electronic component 14 comprising:

a terminal 13; and

a contact structure 15 comprising: a base 12 secured to the terminal 13; and a beam 11 extending from the base 12 and spaced from the electronic component 14. **However**, Smith at el. lakes a cross-sectional width of the beam contoured in a "V" shape. Seymour teaches a beam 12 contoured in a "V" shape (see Figs.2 and 2a). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the "V" shaped beam of Seymour in structure of Smith et al. in order to reduce deflection and deformability of the beam and increase the rigidity.

In regard to claims 75 and 76, Dozier, II et al. disclose that electronic component 304 is a semiconductor die from a plurality of semiconductor dice composing an unsingulated semiconductor wafer (see Col.8, lines 54-60, Col. 9, lines 24-36 and Col.23, lines 33-45).

Claims 3 - 6, 8, 13 – 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (5613861).

Smith et al. discloses the instant claimed invention except for the beam comprises various dimensions, such as an unloaded height over the electronic component, a

width, a length, elastic deflection ratio, elastic range, spring rate and deflection ranges. It would have been obvious to have the beam comprises various dimensions, materials, springs rate and deflection ranges, since such a modification would have involved a mere change in the shape and material of a component. A change in shape and material is generally recognized as being within the level of ordinary skill in the art. ***In re Dailey***, 357 F.2d 669 USPQ 47 (CCPA 1966) and ***In re Leshin***, 125 USPQ 416.

Response to Arguments

Applicant's arguments with respect to claims 3,6,8,13,14,17,19,21,25,38,41,48,51 and 71-82 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Larisa Z Tsukerman whose telephone number is (571)-272-2015. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A Bradley can be reached on (571)-272-2800 ex. 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT
03/02/2005

THO D. TA
PRIMARY EXAMINER